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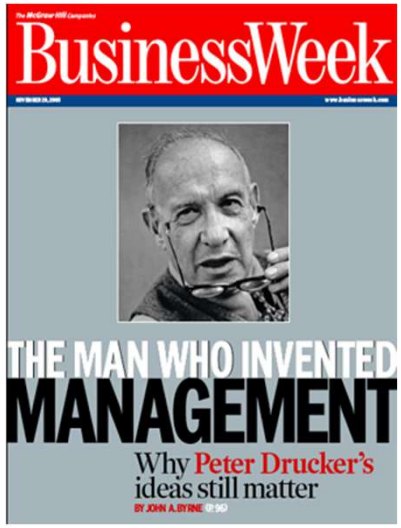
Knowledge Workers vs. Disruptive Technologies

(or technology, in general)



Productivity, and Skill distribution

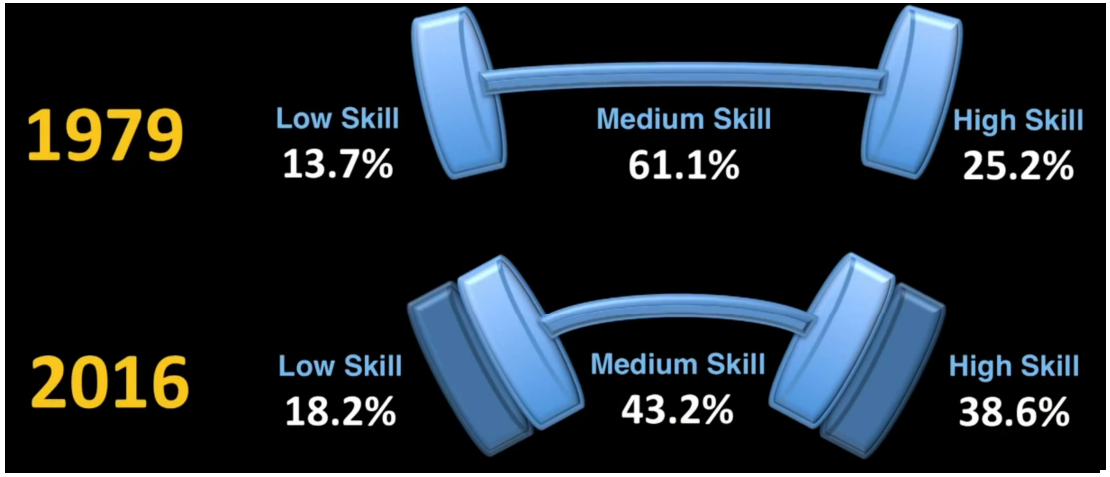
- A productivity measure is expressed as the ratio of output to inputs used in a production process, i.e. output per unit of input.
- Skill differential models bridge skill distribution to wages and productivity (Katz and Murphy, 1992) †
- The relative demand for skills increases over time because changes in technology are assumed to be “skill biased” (Acemoglu, Autor, 2010) ††

† Katz and Murphy, «Changes in Relative Wages, Supply and Demand Factors (1992)

†† *Acemoglu, Daron and Autor, David, «Skills, Tasks and Technologies: Implications for Employment and Earnings», 2010

Technology and Emplyoment

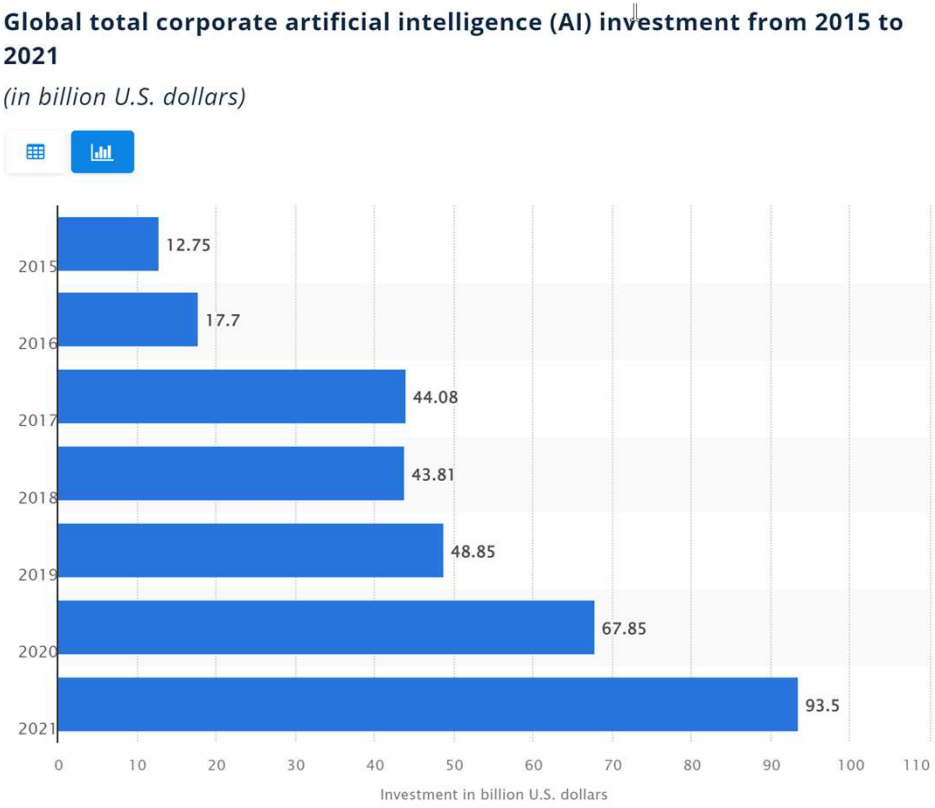
- Two main effects (Brynjffson and McAffee, 2016)[†]:
  1. Create new set of jobs requiring high skill levels
  2. Elimination of some jobs requiring lower skill levels
- Each robot used in Industry reduces number of jobs by 6. (Acemoglu and Restropo, 2017)[††].



[†] Brynjffson, Erik and McAfeee, Andrew «The Second Machine Age», 2016
[††] Acemoglu, Daron & Restropo, Pascual, «Robots and Jobs: Evidence from US Labor Markets», Working Paper, March 2017
Graph: David Autor

ToDo List

- Computation costs are still small (600M might not be a lot).
- STEM education
- Building niches around complementary tech (spillovers)
- Political anvironment: stable political environment is the key for development.



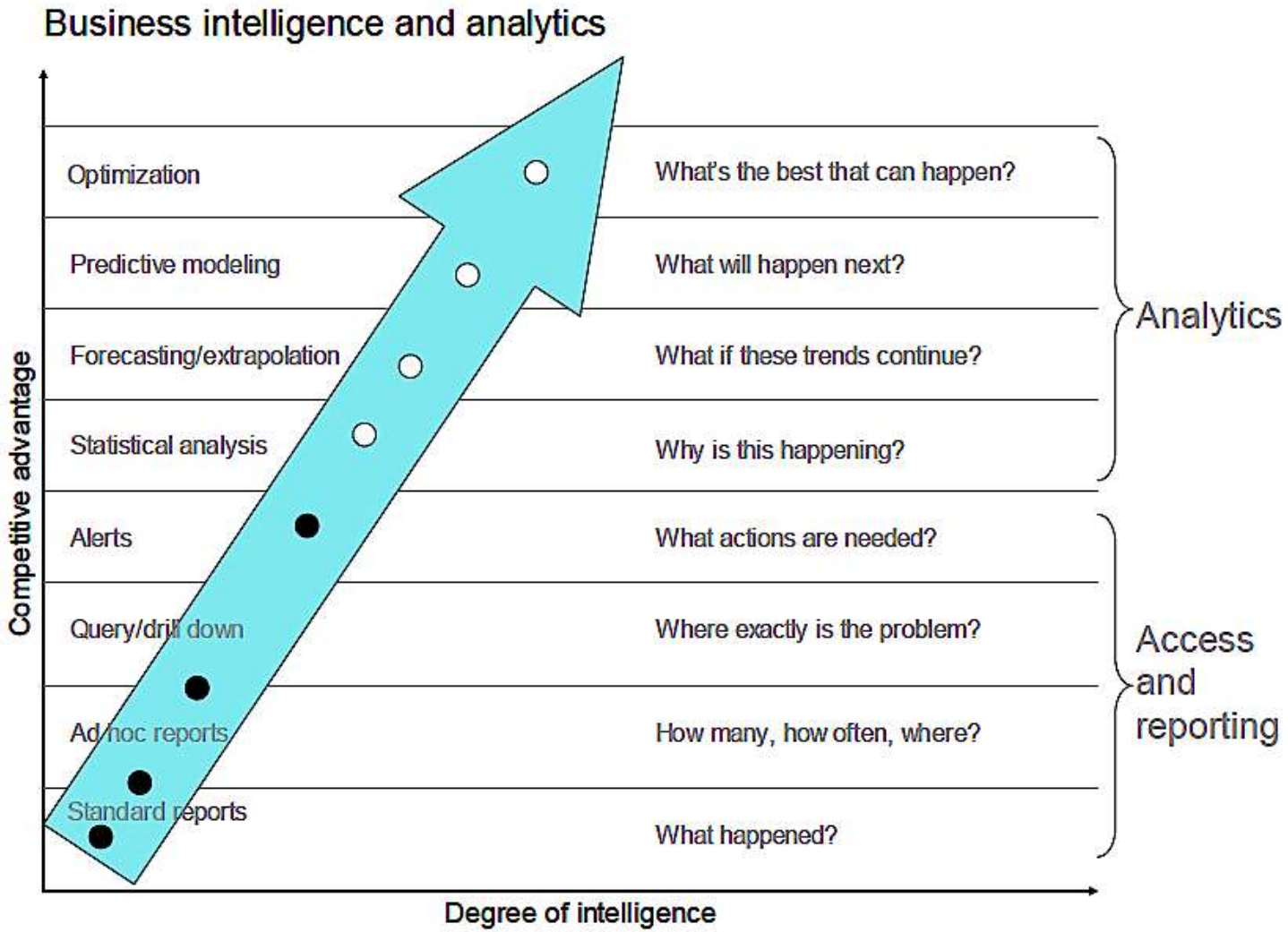


Figure: "Business Intelligence and Analytics" of Davenport and Harris' Competing on Analytics. HBR Press

Foundations of Information Systems in Business

Data vs. Information

- Data: raw facts, observations or measurements typically about physical phenomena or business transactions

- Data: stored representations of meaningful objects and events
  - numbers, text, dates, images, video, documents

- Information: data processed to increase knowledge in the person using the data

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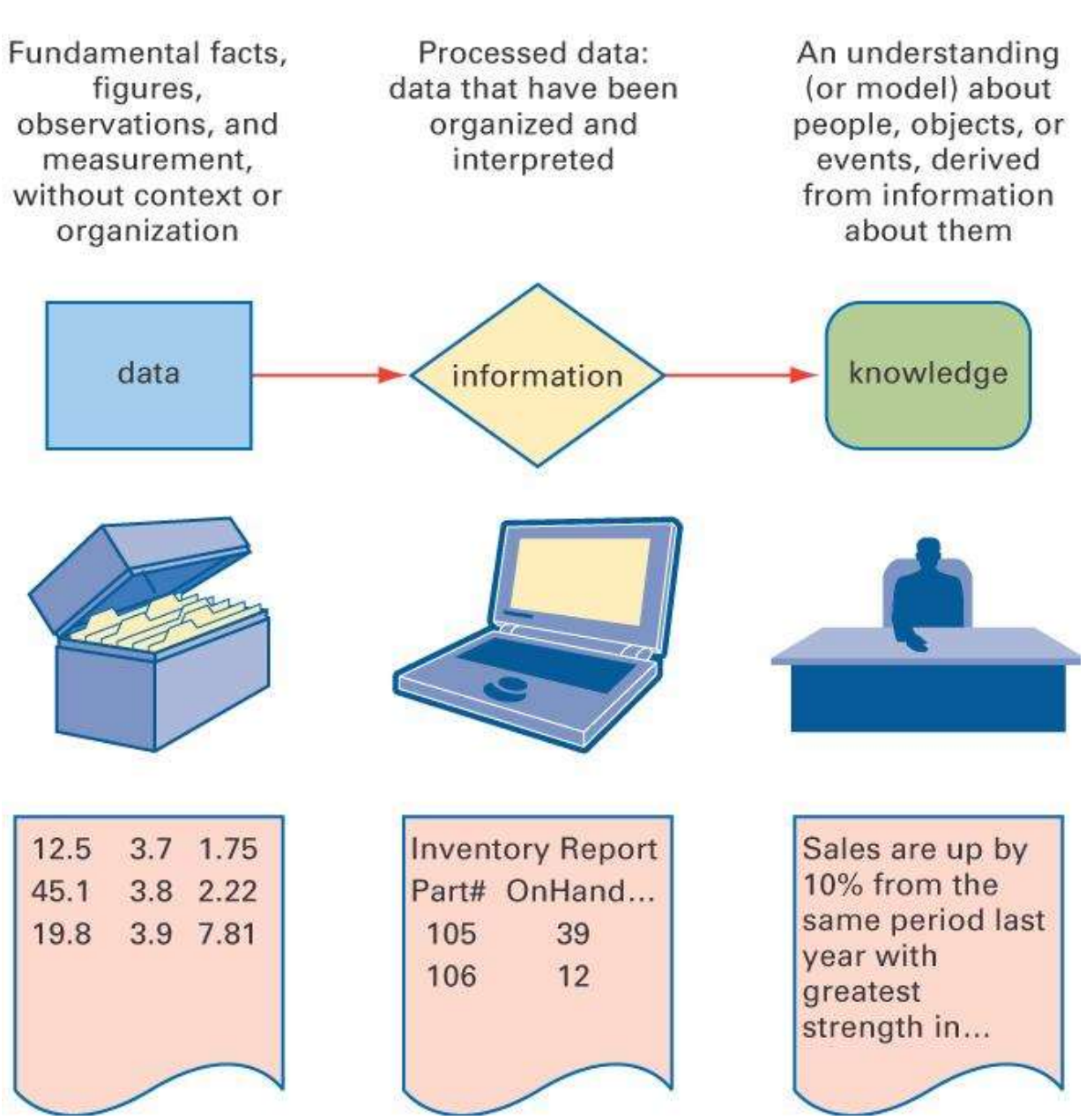
What is Information?

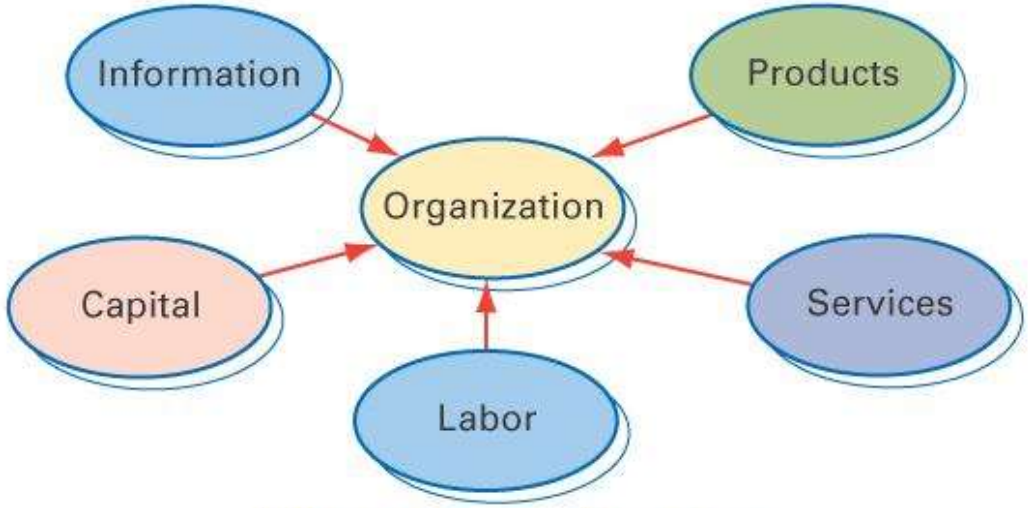
- Information is data that has been organized and interpreted, and possibly formatted, filtered, analyzed, and summarized

- Data that have been converted into a meaningful and useful context for specific end users


Fundamental facts, figures, observations, and measurement, without context or organization
Processed data: data that have been organized and interpreted
An understanding (or model) about people, objects, or events, derived from information about them
data
information
knowledge
12.5 3.7 1.75
45.1 3.8 2.22
19.8 3.9 7.81
Inventory Report
Part# OnHand...
105 39
106 12
Sales are up by 10% from the same period last year with greatest strength in...

Role of Information In Organizations

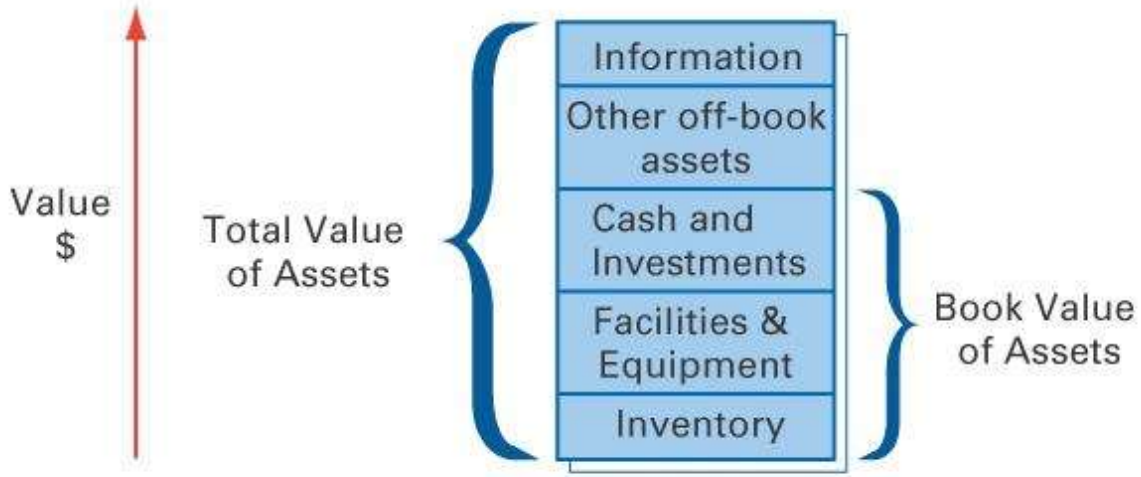
- Information As a Resource
  - Information is an input into the production of goods and services.



Information as a Resource

Role of Information In Organizations

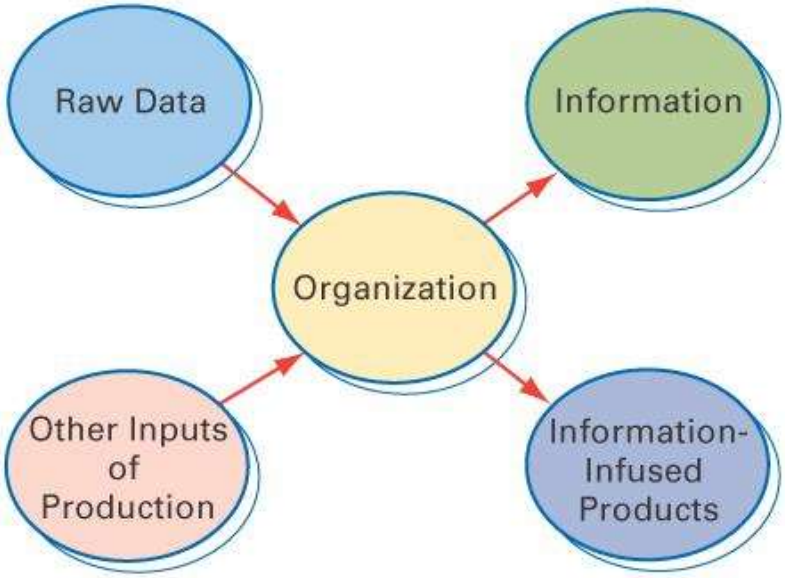
- Information As an Asset
  - The property of a person or an organization that contributes to a company's output



Information as an Asset

Role of Information In Organizations

- Information As a Product (Goods vs. Services)
  - Companies can also sell information, the output of its production, as a product or service or as an embedded component of a product.

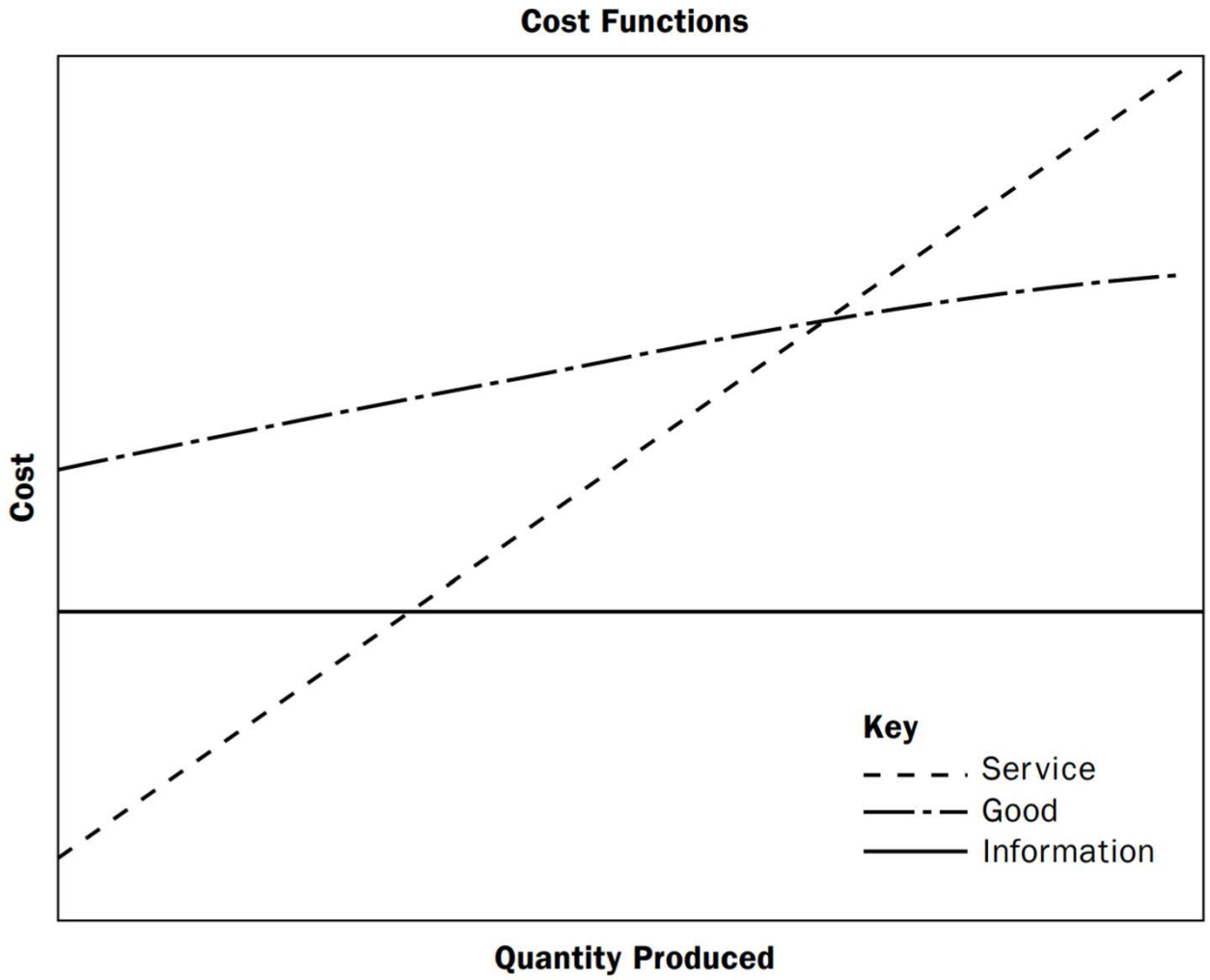


Information as a Product

A comparison of goods, services, and information

Product characteristics	Goods	Services	Information
Heterogeneity	Low	High	Very Low
Perishability	Low	High	Very Low
Inseparability	Low	High	Low
Tangibility	High	Low	Very Low
Ownership	High	Low	Both
Reproducibility	Low	Low	Very high

Jon Freiden, Ronald Goldsmith, Scott Takacs and Charles Hofacker Information as a product: not goods, not services Marketing Intelligence & Planning 16/3 [1998] 210–220

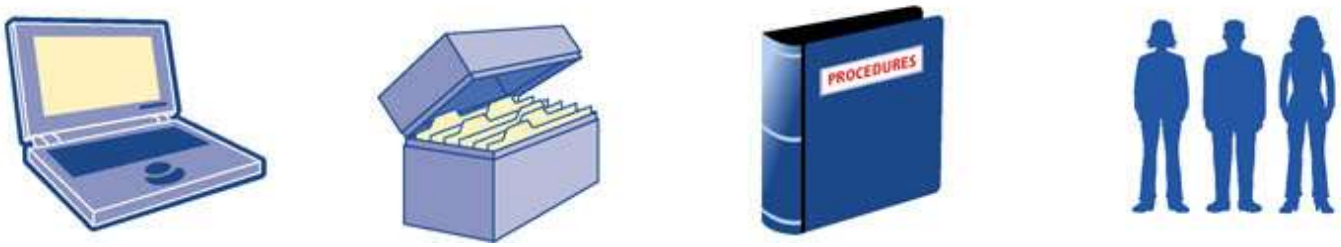

Cost Functions
Cost
Quantity Produced
Key
Service
Good
Information

Information Technology vs. Information Systems

- Information Technology (IT) – various hardware components necessary for the system to operate
- IT Includes computer hardware, software, database management systems, and data communication systems
- Information Systems (IS) – Combines information technology with data, procedures for processing data, and people who collect and use the data

What is an Information System?

Information Technology + Data + Procedures + People = INFORMATION SYSTEMS

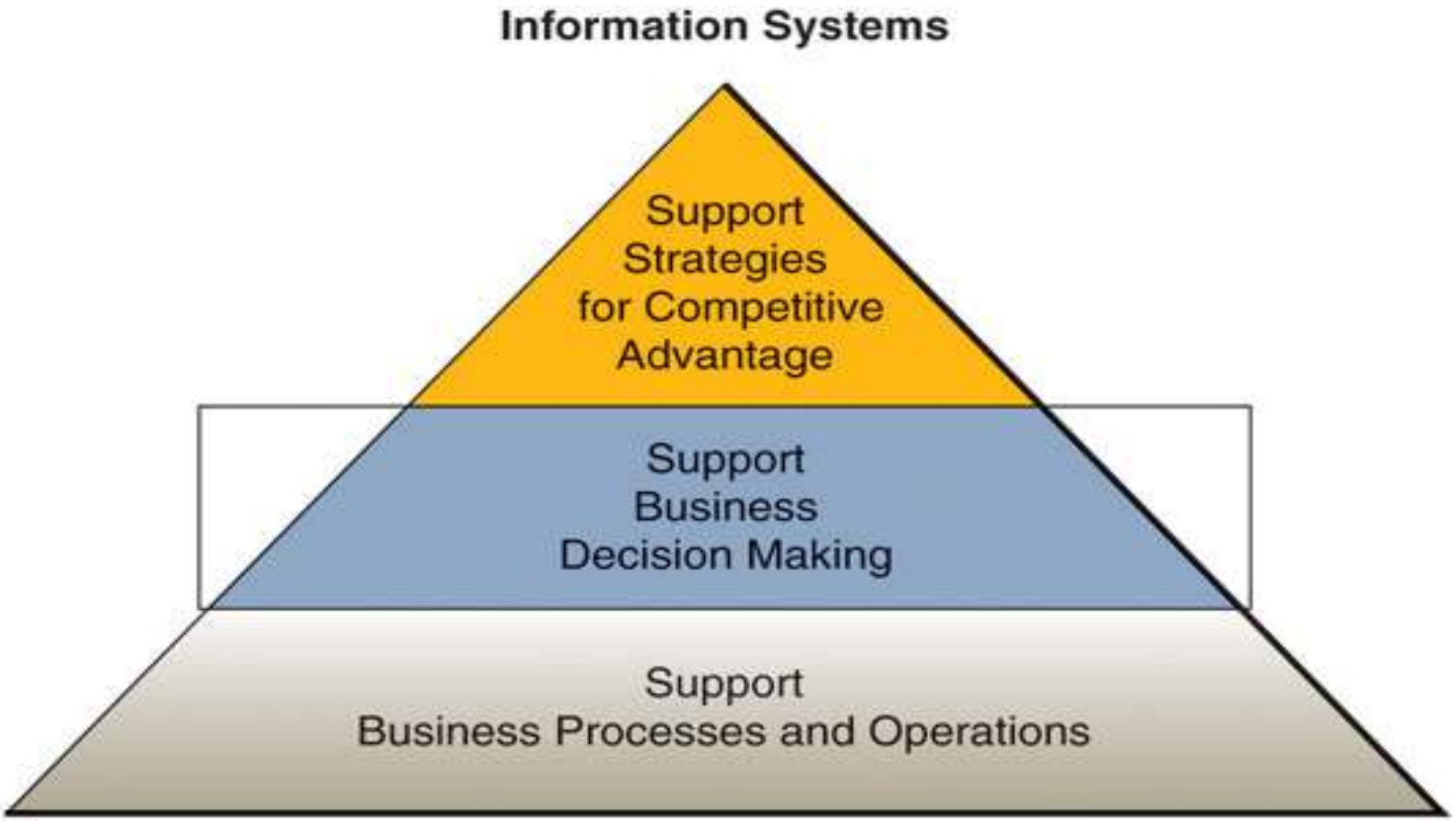


Any organized combination of people, hardware, software, communications networks, and data resources that stores, collects (or retrieves), process, and distribute (or transforms, and disseminates) information to support decision making and control in an organization.

Why Study Information Systems?

- Information technology can help all kinds of businesses improve the efficiency and effectiveness of their business processes, managerial decision making, and workgroup collaboration, thus strengthening their competitive positions in a rapidly changing marketplace.
- Internet-based systems have become a necessary ingredient for business success in today's dynamic global environment.

Roles of IS in Business



Types of Information Technologies

- Computer Hardware Technologies

  including microcomputers, midsize servers, and large mainframe systems, and the input, output, and storage devices that support them

- Computer Software Technologies

  including operating system software, Web browsers, software productivity suites, and software for business applications like customer relationship management and supply chain management

Types of Information Technologies

- Telecommunications Network Technologies

  including the telecommunications media, processors, and software needed to provide wire-based and wireless access and support for the Internet and private Internet-based networks

- Data Resource Management Technologies

  including database management system software for the development, access, and maintenance of the databases of an organization